

ALUMINOBOROSILICATE GLASS

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Abstract of JP2002201040

PROBLEM TO BE SOLVED: To obtain an aluminoborosilicate glass enabling to reduce bubble occurrence. **SOLUTION:** This aluminoborosilicate glass comprises, in mass%, 45 to 78 SiO₂, 2 to 22 Al₂O₃, 4 to 15 B₂O₃, 0 to 2 Li₂O, 0 to 10 Na₂O, 0 to 3 K₂O, 0 to 5 MgO, 0 to 8 CaO, 0 to 10 SrO, 0 to 17 BaO, 0 to 10 ZnO, 0 to 0.15 Fe₂O₃, 0 to 0.015 SO₃, 0 to 1 Cl, and 0 to 0.5 F, where Cl+F is ≥ 0.05 .

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Claims:

[Claim 1]

An alumino-borosilicate glass, which consists essentially of:
SiO₂ of 45 to 78%, Al₂O₃ of 2 to 22%, B₂O₃ of 4 to 15%, Li₂O of 0 to 2%, Na₂O of 0 to 10%, K₂O of 0 to 3%, MgO of 0 to 5%, CaO of 0 to 8%, SrO of 0 to 10%, BaO of 0 to 17%, ZnO of 0 to 10%, Fe₂O₃ of 0 to 0.15%, SO₃ of 0 to 0.015%, Cl of 0 to 1%, and F of 0 to 0.5%, with each component expressed as % by weight, and wherein Cl+F is 0.05% or more.

[Claim 2]

The alumino-borosilicate glass according to claim 1, wherein Al₂O₃ is 2 to 20%, CaO is 0 to 6%, SO₃ is 0.001 to 0.015%, Cl is 0.05 to 0.8%, and F is 0 to 0.3%.

[Claim 3]

The alumino-borosilicate glass according to claim 1 or 2, wherein SiO₂ is 61% or more, and Al₂O₃ is 10% or less.

[Claim 4]

The alumino-borosilicate glass according to claim 1, 2 or 3, wherein B₂O₃ is 7% or more.

[Claim 5]

The alumino-borosilicate glass according to claim 1, 2, 3 or 4, wherein Li₂O+Na₂O+K₂O is 1% or more.

[Claim 6]

The alumino-borosilicate glass according to any of claims 1 to 5, wherein the strain point is 520 to 700°C.

[0001]

[Field of the Invention]

The present invention relates to an alumino-borosilicate glass which is suitable for an ampoule, a substrate for a liquid crystal display, a substrate for a photomask, a substrate for a magnetic disk, or the like.

Table 1

Example	1	2	3	4	5
SiO ₂	73.2	59.2	56	81	72
Al ₂ O ₃	4.7	17.7	11	2.4	5.1
B ₂ O ₃	9.2	8	5.9	12.4	9.1
Li ₂ O	0.10	0	0	0	0
Na ₂ O	6.1	0.01	0.05	3.3	6
K ₂ O	0.5	0	0	0.5	0.5
MgO	0.02	2.8	2.1	0.03	0.02
CaO	0.35	4.5	3	0.04	0.4
SrO	0	7.5	6.5	0	0
BaO	3.5	0.1	15.1	0	4
ZnO	2.7	0	0	0	2.5
Fe ₂ O ₃	0.06	0.07	0.05	0.10	0.06
TiO ₂	0.05	0.04	0.04	0.03	0.05
ZrO ₂	0.05	0.04	0.10	0	0.05
SO ₃	0.0025	0.004	0.01	0.008	0.005
Cl	0.34	0.16	0.43	0.10	0.01
F	0.09	0.06	0.09	0.03	0
α	51	38	49	32	52
Strain point	530	660	635	520	535
Annealing point	570	715	690	565	575
Bubble	0.1 or less	0.1 or less	0.1 or less	0.1 or less	5
Homogeneity	Good	Good	Good	Good	Bad